

REMARKS***Summary of the Amendment***

Upon entry of the Listing of Claims, claims 1 – 33 will remain pending. However, as the Examiner has withdrawn claims 16 – 32, directed to the non-elected invention, from further consideration, only claims 1 – 15 and 33 are currently under consideration by the Examiner.

Summary of the Official Action

In the instant Office Action, the Examiner has rejected claims 1 – 15 and 33 over the art of record. Moreover, claims 16 – 32, directed to the non-elected invention, remain withdrawn from consideration. By the present remarks, Applicants submit that the rejections have been overcome, and respectfully request reconsideration of the outstanding Office Action and allowance of the present application.

Traversal of Rejection Under 35 U.S.C. § 103(a)

Applicants traverse the rejection of claims 1 – 15 and 33 under 35 U.S.C. § 103(a) as being unpatentable over WO 01/98585 [hereinafter "WO '585"]. The Examiner asserts that WO '585 shows all of the features of the instant invention, including compression of the web and deformation of the fibers, except for the elastic compression of the web and the placement of the wide nip calender relative to the coating device such that the elastic compression of the web by the wide nip calender is still present when the web enters the coating device. The Examiner, however, asserts that it would have been obvious to one ordinarily skilled in the art that the apparatus is capable of elastic compression of the web and that it would have been obvious to one ordinarily skilled in the art to set a distance between the wide nip calender and the coating device so that the elastic compression of

the web by the wide nip calender is still present when the web enters the coating device. Applicants traverse the Examiner's assertions.

As Applicants have previously set forth, the instant invention is directed to impregnating paper or cardboard webs with an impregnating agent in order to obtain a web that at least in part acts in a hydrophobic manner. Moreover, web strength is improved. In known arrangements, when such agents are applied to thin webs, it is relatively easy to press the agent into or through the web to ensure a consistent application of the agent over the entire cross-section of the web.

However, when thicker webs are utilized in these known arrangements, it becomes more difficult to ensure this permeation of the agent into the web, such that the agent remains in areas on the surface. As a result, the web surface may be adequately hydrophobic, but the strength of the web is not adequately improved. While penetration of the agent into the web can be improved by operating under high pressure when applying the agent, a loss of volume occurs, which leads to a reduction in strength.

Accordingly, the present invention utilizes an *elastic* compression of the web, such that, the agent is applied to the compressed web so that, when the web expands (or decompresses), the web becomes soaked with the agent through a deeper penetration of impregnating agent into the web. Thus, the instant invention compresses the web elastically in the wide nip calender and positions the coating device relative to the wide nip calender in such a manner that the elastic web compression is still present when the web enters the coating device. As it is merely an elastic compression, this compression will be reversed, namely after the application of the impregnating agent. The web thus soaks up the impregnating agent, and an extensive penetration of the web with the impregnating

agent is achieved without any high pressure being required from outside during the application of the impregnating agent. This results in a very volume-sparing treatment of the web during impregnation. In this manner, the expansion of the web (decompression) draws the impregnating agent into the web.

Accordingly, Applicants' independent claim 1 recites, *inter alia*, a wide nip calender located, with respect to a web travel direction, before said coating device, said wide nip calender comprising a circulating jacket and a back pressure element arranged to form a wide nip and *an elastic compression of the web*, such that a distance between said coating device and said wide nip calender is such that *the elastic compression of the web by said wide nip calender is still present when the web enters the coating device*. Further, Applicants' independent claim 33 recites, *inter alia*, a wide nip calender located, with respect to a web travel direction, before said coating device, said wide nip calender comprising a circulating jacket and a back pressure element arranged to form a wide nip and *an elastic compression of the web*. Applicants submit that WO '585 fails to disclose at least the above-noted features of the invention.

While WO '585 discloses a wide nip calender followed by a coating device, Applicants note that WO '585 expressly discloses that the nip produces a *permanent compression*, see, e.g., page 9, line 1 and the Abstract, which is wholly inconsistent with expressly recited features of *elastic compression*, as recited in at least independent claims 1 and 33.

Thus, Applicants submit that WO '585 teaches an arrangement in which the web is permanently compressed. As a result, a coating agent, which is intended to act merely on the surface of a permanently compressed web, is applied to the surface. However,

Applicants note that, as WO '585 fails to provide any teaching or suggestion of an elastic compression, the applied art cannot even arguably disclose the web remains in the elastically compressed state until after the coating is applied. As discussed above, this enables the intended result of the coating be drawn into the web. Moreover, as the web of WO '858 is permanently compressed, this document cannot even arguably suggest the web remains in the elastically compressed state *until after* the coating is applied, as recited in the claims.

While WO '585 discloses on page 7, lines 31 and 32 that the pressure profile and nip length can be adjusted by adjusting the shoe, this document is solely directed to achieving permanent compression such that there is no teaching or even an arguable suggestion of achieving elastic compression, as recited in the pending claims. That is, as WO '585 expressly discloses that the permanent compression of the web occurs in the press before applying a coating, the art of record fails to provide any teaching or suggestion that would render unpatentable the combination of features recited in at least independent claims 1 and 33.

Additionally, WO '585 discloses on page 4, line 23 to page 5, line 7 that the apparatus is operated such that fibers at the surface of the web are brought to a state of plastic deformation (permanent compression) in the wide nip calender, while fibers in the middle of the z-direction may be left unaffected, wherein the bulkiness of the paper is maintained. Examiner contends that this would infer to one skilled in the art that the WO '858 apparatus is capable of being operated such that elastic compression in the nip occurs since the fibers in the middle in the z-direction of the paper web are left unaffected or not compressed and fibers only at the surface of the web are plastically deformed.

Applicants submit, however, that this further teaches away from the present invention and absent Applicants' disclosure, there is no reasonable rationale to infer the WO '858 apparatus is capable of being operated to achieve elastic compression of the web. Moreover, as the fibers in the middle in the z-direction of the paper web in WO '858 are left unaffected or not compressed, Applicants submit there is still no teaching or suggestion of the recited elastic compression. Therefore, Applicants submit it would not have been obvious to one skilled in the art to modify WO '858 in order to elastically compress a web, as such a modification is contrary to the express disclosure of the applied art.

Furthermore, as WO '858 does not teach or suggest an elastic compression of the web, Examiner's contention that it would have been obvious to one skilled in the art to set a distance between the wide nip calender and the coating device such that the elastic compression of the web by the wide nip calender is still present when the web enters the coating device is certainly not supportable. As discussed above, WO '858 does not teach or suggest elastic compression, but rather plastic (permanent) compression of a surface of the web and no compression of the inner portion of the web. Examiner contends that the capability of an elastically compressed web to be present in the coating device is dependent upon the amount of resiliency of the web and degree of compression of the web. Applicants submit, however, the express disclosure of WO '858 provides no degree of resiliency of the web and no degree of compression in requiring plastic (permanent) compression of the surface before coating. Therefore, Applicants submit that, as there is no elastic compression, it would not have been obvious to one skilled in the art to modify WO '858 to set a distance between the wide nip calender and the coating device such that

the elastic compression of the web by the wide nip calender is still present when the web enters the coating device.

Because the art of record fails to provide any teaching or suggestion of elastic compression of the web, or placement of the coating device relative to the wide nip calender such that elastic compression of the web is present at the coating device, Applicants submit that no proper modification of WO '585 can even arguably render unpatentable the combination of features recited in at least independent claims 1 and 33. Therefore, Applicants submit that the instant rejection is improper and should be withdrawn.

Further, Applicants note that, as the art of record fails to provide any teaching or suggestion of elastic compression of the web, the art of record fails to suggest the requisite motivation or rationale for modifying WO '585 in any manner that would render unpatentable the combination of features recited in at least independent claims 1 and 33. Examiner has not identified or stated any motivation or rationale for modifying WO '585, as required for a proper rejection under 35 U.S.C. § 103(a). Applicants respectfully request that the Examiner specifically identify a proper motivation for modifying WO '585 if this rejection is maintained.

Moreover, as the Examiner's asserted modification of WO '585 is wholly contrary to the express disclosure of WO '585, i.e., the applied art expressly requires permanent *not* elastic compression of the web, Applicants submit that the only reasonable basis for modifying WO '585 is the use of improper hindsight after reviewing Applicants' own disclosure. Thus, Applicants submit that, for this additional reason, the pending rejection is improper and should be withdrawn.

Further, Applicants submit that claims 2 – 15 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicants submit that no proper modification of WO '585 teaches or suggests, *inter alia*, the impregnating agent comprises a starch solution or other coating agents commonly used in paper upgrading, as recited in claim 2; the starch solution comprises a starch size, as recited in claim 3; the web comprises one of a paper or cardboard web, as recited in claim 4; the impregnating agent is applied to a web having a basis weight over 40 g/m², as recited in claim 5; between said wide nip and said coating device, no other web processing devices are provided, as recited in claim 6; at least one guide device is arranged between said wide nip and said coating device, as recited in claim 7; said wide nip calender further comprises a heating device, as recited in claim 8; said heating device is formed by said back pressure element, as recited in claim 9; said heating device comprises a surface structured to guide the web through said wide nip, and said surface having a temperature adjustable to at least 200°C, as recited in claim 10; said coating device comprises a film press, as recited in claim 11; further comprising a drying area located downstream of said coating device, as recited in claim 12; said wide nip is heated to a temperature higher than a temperature in said drying area, as recited in claim 13; said wide nip is adjustably heated to at least a plasticizing temperature of web fibers of the web, as recited in claim 14; and further comprising a reeling device arranged downstream of said coating device, wherein no glazing device is arranged between said coating device and said reeling device, as recited in claim 15.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1 – 15 and 33 under 35 U.S.C. § 103(a) and indicate that these claims are allowable.

Application is Allowable

Thus, Applicants respectfully submit that each and every pending claim of the present invention meets the requirements for patentability under 35 U.S.C. § 103(a), and respectfully request the Examiner to indicate allowance of each and every pending claim of the present invention.

Authorization to Charge Deposit Account


The undersigned authorizes the charging of any necessary fees, including any extensions of time fees required to place the application in condition for allowance by Examiner's Amendment, to Deposit Account No. 19 - 0089 in order to maintain pendency of this application.

CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicants' invention, as recited in each of claims 1 – 15 and 33. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Respectfully submitted,
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September 27, 2006
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